

Claims:

1. A method of modifying a surface of a casting, comprising:
 - (a) providing a casting mould;
 - (b) placing a perforated mask with the mould to define a masked area of the mould;
 - (c) spray-coating the masked area of the mould with a coating material selected for forming a surface layer on the casting;
 - (d) introducing a liquid casting material to the mould; and,
 - (e) solidifying the liquid casting material to form a surface modified casting.
2. The method according to claim 1, wherein the casting mould is pre-treated to strengthen the mould.
3. The method according to claim 1, wherein the perforated mask is placed with the mould to provide a gap between the mask and the mould of about 1 mm to about 15 mm throughout the masked area.
4. The method according to claim 1, wherein the perforated mask comprises a metal, a metal-coated plastic, a ceramic, or carbon.
5. The method according to claim 1, wherein the perforated mask has a regular pattern of perforations and 2 to 20 openings per 2.5 cm, and wherein the perforations have a regular shape and a shortest axis measuring about 0.5 mm to about 20 mm.
6. The method according to claim 5, wherein the mask is a mesh.

7. The method according to claim 1, further comprising applying an overlay of coating material to the mould without the perforated mask before introducing the liquid casting material to the mould.
8. The method according to claim 1, wherein the spray-coating comprises subsequent passes and a different coating material is applied in one or more of the subsequent passes.
9. The method according to claim 1, wherein the perforated mask is left with the mould when the liquid casting material is introduced to the mould to thereby form a surface layer incorporating the mask.
10. The method according to claim 1, wherein the casting material is a metal.
11. A method of modifying a surface of a metal casting, comprising:
 - (a) providing a ceramic, sand or metallic casting mould;
 - (b) placing a perforated mask with the mould to define a masked area of the mould;
 - (c) thermal spray-coating the masked area of the mould with a coating material selected for forming a surface layer on the metal casting;
 - (d) introducing a molten metal to the mould; and,
 - (e) solidifying the molten metal to form a surface modified metal casting.
12. The method according to claim 11, wherein the casting mould is a ceramic casting mould.

13. The method according to claim 11, wherein the casting mould is pre-treated to strengthen the mould.
14. The method according to claim 11, wherein the coating material comprises an Fe-based alloy, a Ni-based alloy, a Co-based alloy, an oxide, a nitride, a boride, a carbide, a mixture of ceramic with a metal, a mixture of cermet with a metal, or a mixture thereof.
15. The method according to claim 11, wherein the perforated mask comprises a metal, a metal-coated plastic, a ceramic, or carbon.
16. The method according to claim 11, wherein the perforated mask comprises a mesh or a perforated plate.
17. The method according to claim 11, wherein the perforated mask is placed with the mould to provide a gap between the mask and the mould of about 1 mm to about 15 mm throughout the masked area.
18. The method according to claim 11, wherein the perforated mask has a regular pattern of perforations and 2 to 20 openings per 2.5 cm, and wherein the perforations have a regular shape and a shortest axis measuring about 0.5 mm to about 20 mm.
19. The method according to claim 18, wherein the perforated mask is a steel mesh.
20. The method according to claim 11, further comprising applying an overlay of coating material to the mould without the perforated mask before introducing the molten metal to the mould.
21. The method according to claim 11, wherein the molten metal is an Fe-based alloy.

22. The method according to claim 11, wherein the molten metal is a steel or cast iron.

23. The method according to claim 11, wherein the thermal spray-coating comprises subsequent passes and a different coating material is applied in one or more of the subsequent passes.

24. The method according to claim 11, wherein the perforated mask is left with the mould when the molten metal is introduced to the mould to thereby form a surface layer incorporating the mask.